

11

CHEMICAL REACTIONS

Chapter Test A

A. Matching

Match each description in Column B with the correct term in Column A. Write the letter of the correct description on the line.

Column A

Column B

- | | |
|---------------------------------------|--|
| _____ 1. coefficient | a. a chemical equation that does not indicate relative amounts of reactants and products |
| _____ 2. spectator ion | b. a starting substance in a chemical reaction |
| _____ 3. combustion reaction | c. a list of metals in order of decreasing reactivity |
| _____ 4. reactant | d. a reaction in which a single compound is broken down into simpler substances |
| _____ 5. skeleton equation | e. a whole number that appears before a formula in an equation |
| _____ 6. balanced equation | f. a new substance formed in a chemical reaction |
| _____ 7. activity series | g. a particle not directly involved in a chemical reaction |
| _____ 8. product | h. an equation in which each side has the same number of atoms of each element |
| _____ 9. decomposition reaction | i. a reaction in which the atoms of one element replace the atoms of a second element |
| _____ 10. single-replacement reaction | j. a reaction in which oxygen reacts with another substance, often producing heat or light |

B. Multiple Choice

Choose the best answer and write its letter on the line.

- _____ 11. The symbol Δ in a chemical equation means:
- heat is supplied to the reaction.
 - a catalyst is needed.
 - yields.
 - precipitate.
- _____ 12. A catalyst is:
- a solid product of a reaction.
 - one of the reactants in a single-replacement reaction.
 - not used up in a reaction.
 - the product of a combustion reaction.

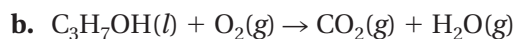
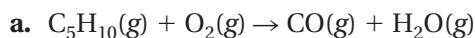
- _____ 22. Which of the following statements is *incorrect*?
- Complete combustion has occurred when all the carbon in the product is in the form of carbon dioxide.
 - A single reactant is the identifying characteristic of a decomposition reaction.
 - The only way to determine the products of a reaction is to perform the reaction.
 - All chemical reactions can be classified as one of four general types.
- _____ 23. A chemical formula written above or below the yield sign indicates:
- that a gas is formed.
 - that the substance is used as a catalyst.
 - that heat must be supplied.
 - a reversible reaction.
- _____ 24. The equation $2\text{C}_3\text{H}_7\text{OH}(g) + 9\text{O}_2(g) \rightarrow 6\text{CO}_2(g) + 8\text{H}_2\text{O}(g)$ is an example of which type of reaction?
- combustion
 - combination
 - double-replacement
 - decomposition
- _____ 25. A double-replacement reaction takes place when aqueous K_2SO_4 reacts with aqueous $\text{Pb}(\text{NO}_3)_2$. You would expect one of the products of this reaction to be:
- K_2S .
 - NaPb .
 - PbSO_4 .
 - CNO_3 .

C. Problems

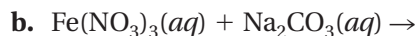
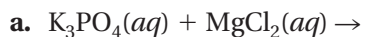
Solve the following problems in the space provided. Show your work.

26. Balance the following equations:
- $\text{Ca}(s) + \text{H}_3\text{PO}_4(aq) \rightarrow \text{Ca}_3(\text{PO}_4)_2(s) + \text{H}_2(g)$
 - $\text{KBrO}_3(s) \rightarrow \text{KBr}(s) + \text{O}_2(g)$
 - $(\text{NH}_4)_2\text{CO}_3(aq) + \text{NaOH}(aq) \rightarrow \text{Na}_2\text{CO}_3(aq) + \text{NH}_3(g) + \text{H}_2\text{O}(l)$
27. For each equation in question 26, identify the type of reaction.
- _____
 - _____
 - _____

28. Balance the following equations. Indicate whether combustion is complete or incomplete.



29. Complete and balance the following equations. Then write each as a net ionic equation.



D. Essay

Write a short essay for the following.

30. What determines whether one metal will replace another metal from a compound in a single-replacement reaction?
